NIDEK

AUTO DRILLING UNIT

Model *Lex Drill*

OPERATOR'S MANUAL

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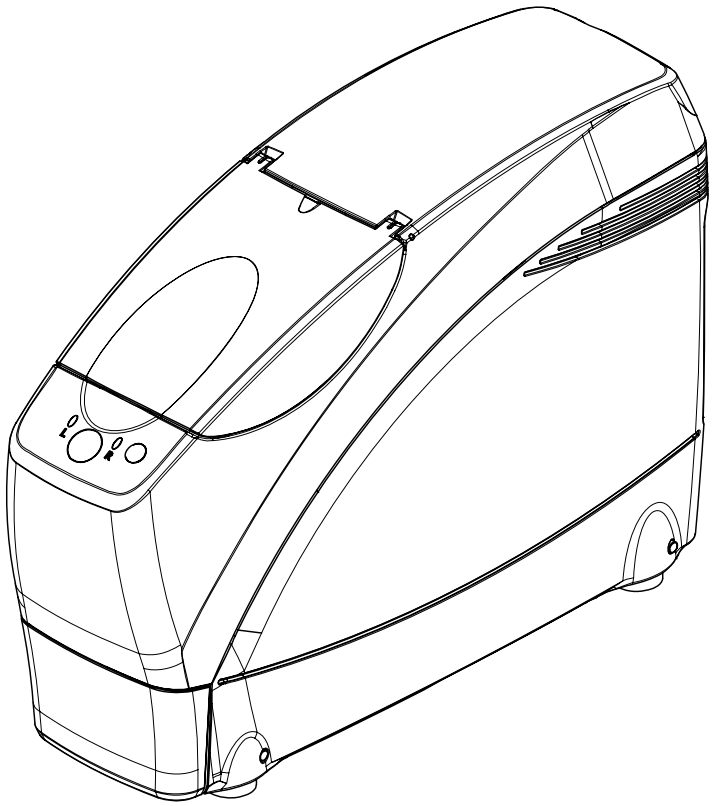

NIDEK

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October 2007

Use this instrument properly and safely.

⚠ **BEFORE USE, READ THIS MANUAL.**

This operator's manual includes operating procedures, safety precautions and specifications for the NIDEK AUTO DRILLING UNIT, Lex Drill. IEC standards are applied in this manual.

Cautions for safety and operating procedures must be thoroughly understood before using this instrument.

Keep this manual handy for reference.

If you encounter any problems or have questions about the instrument, please contact NIDEK or your authorized distributor.

Safety precautions

In this manual, signal words are used to designate the degree or level of safety alerting. The definitions are as follows.

⚠ **WARNING** • Indicates a potentially hazardous situation which, if not avoided, might result in death or serious injury.

⚠ **CAUTION** • Indicates a potentially hazardous situation which, if not avoided, might result in minor or moderate injury or properly damage accident. Even situations indicated by ⚠**CAUTION** might result in serious injury under certain conditions.

Consult this manual in all cases where ⚠ is used, in order to find out the nature of the potential hazard and any actions which have to be taken.

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Use precautions

Before Use

⚠ **CAUTION**

- **Do not use this instrument for other than the intended purpose.**
  NIDEK will not be responsible for accidents or malfunction caused by misuse.
- **Never disassemble nor touch the inside of the instrument.**
  This may result in electric shock or malfunction.
- **Install the instrument in an environment that meets the following conditions.**
  The following conditions must be maintained during use.
  Use conditions Temperature: 5 to 40 °C (41 to 104 °F)
  Humidity: 30 to 80% [from 5 to 31 °C (40 to 87.8 °F)]
  The minimum acceptable relative humidity is 30% for the temperature range of 31 to 40 ºC. (87.8 to 104 °F) The maximum acceptable relative humidity is 80% for temperatures up to 31 ºC which decreases linearly after that to 50% relative humidity at 40 ºC.
  Pressure: 700 to 1060 hPa
- **Be sure to use a wall outlet which meets the power specification requirements.**
  If the line voltage is too high or too low, the instrument may not give full performance. Malfunction or fire may result.
- **Fully insert the main power plug into the outlet.**
  Fire may occur if the instrument is used with a loose connection.
- **Do not place heavy objects on the cord.**
  A damaged power cord may cause fire or electric shock.
- **Do not yank the power cord to disconnect it from an outlet.**
  This can damage the metal core of the cord and may result in short circuit or electric shock.
- **Be sure to properly ground the instrument.**
  Electric shock or fire may occur in the event of malfunction or power leakage.
- **Do not use a power cord other than the one provided. Also do not connect the provided power cord to any other device.**
  Failure or fire may result.
- **Do not block the vent holes in the both sides.**
  Failure to do so could cause a rise in temperature inside the instrument which may result in failure.
- **Install the instrument in a stable and level place where shock does not occur.**
  Tilting or vibration can prevent normal lens processing.
- **Securely connect the cable to the Edger port.**
  Data may not be transferred correctly.

⚠ **CAUTION**

- **Hold the unit by the base with both hands when moving the instrument to a different location.**

  You may drop the instrument holding only the waste bin or processing chamber door and it may cause injury or malfunction.

During Use

⚠ **WARNING**

- **Never touch the drill when it is rotating.**

  It may result in injury.

- **Be sure to use this instrument only to process lenses for glasses.**

  If any other materials are processed, the drill may break and shatter resulting in injury. In addition, the damaged drill can not perform normal processing.

- **Never open the processing chamber door during lens processing.**

  Processing waste may be released resulting in eye or skin damage.
  When the processing chamber door is opened, processing automatically shuts down, bringing the drill to a sudden stop. The lens or drill may break at that time. A broken piece may result in injury.

- **Do not inhale particles produced during lens dressing. Wear a protective mask, protective glasses and such as necessary.**

  There is a possibility that the particles are harmful depending on the materials.

⚠ **CAUTION**

- **Be careful to keep hands away from the drill when setting or removing the lens.**

  The drill has a sharp edge. Accidental contact with the sharp edge of the drill may result in injury.

- **Processing waste may be adhered to the processed lens that may cause injury to hands or fingers.**

  Be careful not to hurt your finger.

- **Immediately replace the power cord if the internal wires are exposed, the table turns on or off when the power cord is moved, or the cord and/or plug are too hot to hold.**

  This may result in electric shock or fire.

- **In the event of smoke or strange odors, immediately and disconnect the power plug from the wall outlet. After you are sure that the smoke has stopped, contact NIDEK or your authorized distributor.**

  Usage of the instrument under such abnormal conditions may cause fire or electric shock. In case of fire, use a dry chemical (ABC) extinguisher to extinguish the fire.

- **Be sure to make the correct material selection for the lens material being processed.**

  If an improper material is selected, the finished quality of hole may be degraded.

- **Do not place heavy objects or apply pressure by hands on the instrument.**

  Doing so could affect the processing accuracy.

- **Do not reach inside the instrument while the waste bin is removed.**

⚠ **CAUTION**

- **Dispose of processing waste before the waste bin becomes half full.**
  Excessive processing waste may overflow into the instrument resulting in malfunction.
- **Be careful not to get fingers caught by the lens chuck shafts (lens chuck and cup holder).**
- **Do not press the drill release button other than when replacing the drill bit.**
  Failure to do so could cause malfunction.
- **Do not operate the drill with no drill bit attached.**
  Failure to do so could cause malfunction of the spindle.

After Use

⚠ **WARNING**

- **Wear protective gloves when cleaning the processing chamber.**
  The drill has a sharp edge. Touching the drill with bare hands may result in injury.
- **Be sure to close the processing chamber door while the instrument is not in use.**
  As the drill bit is attached pointing upward, accidental contact with the drill may result in hand injury.

⚠ **CAUTION**

- **Occasionally clean the prongs of the power plug with a dry cloth.**
  If dust settles between the prongs, the dust will collect moisture, and short circuit or fire may occur.
- **If the instrument will not be used for a long time, disconnect the power cord from the wall outlet.**
  If dust settles between the prongs, the dust will correct moisture, and short circuit or fire may occur.
- **Do not use organic solvents such as paint thinner to clean the exterior of the instrument.**
  This could damage the surface.
- **Do not store the instrument in an area that is exposed to rain, water or contains poisonous gas or where any liquids are stored.**
- **Verify that the following specified environmental conditions for transport and storage (packed condition) are met.**
  Environmental conditions
  - Temperature: –25 to 70 °C (–13 to 158 °F)
  - Humidity: 10 to 95% (non-condensing)
- **To transport the instrument, use the special packing materials to protect from shock and impact.**
  Excessive vibration or impact to the instrument may cause malfunction.

Disposal

⚠ **CAUTION**

- **Follow the local ordinances and recycling regulations regarding disposal or recycling of the components.**

  It is recommended to commission the disposal to a designated industrial waste disposal contractor.

- **When disposing of packing materials, sort them by material and follow local ordinances and recycling regulations.**

- **When disposing of processing waste, follow local ordinances.**

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1. BEFORE USE

1.1 Outline of Instrument

The NIDEK Lex Drill is a standalone drilling unit designed for use with the patternless edger Lex 1000. It drills holes in lenses shaped by the Lex 1000.
The holes are drilled based on the data from the Lex 1000.
This instrument is constructed with the processing chamber in the top and the control panel just below. The control panel starts or stops processing while the lens is processed in the processing chamber. In addition, the lens is processed in the processing chamber.

○ Available lens material

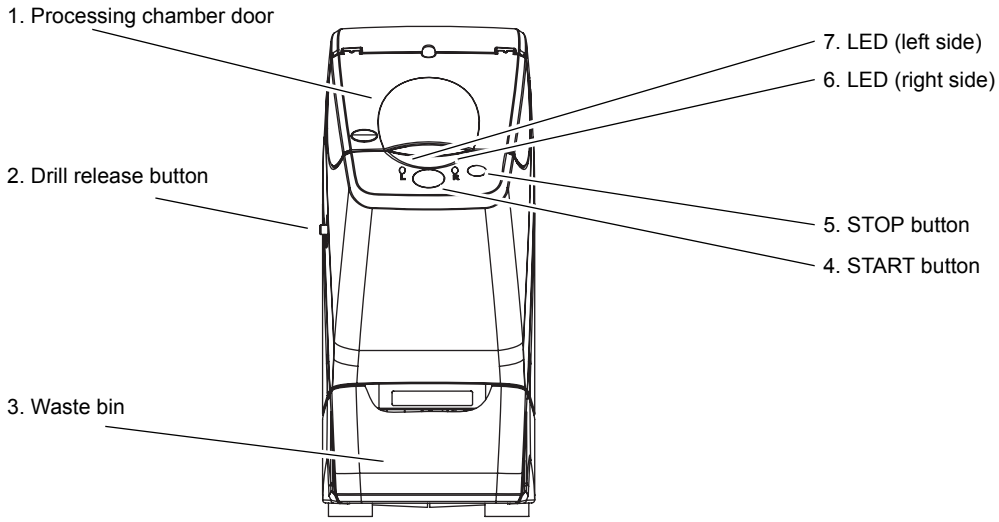
Lens material						
Plastic	High index plastic	Polycarbonate	Acrylic resin	Trivex	Polyurethane	Glass
○	○	○	○	○	○	×

○ : Available
× : Unavailable

* The “Trivex” setting is used when processing plastic lenses susceptible to heat (suc as Trivex).

1.2 Configuration

○ Front view



1. Processing chamber door

The door of the processing chamber. It prevents processing waste from flying free.

Be sure to close the door during processing.

2. Drill release button

The part holding the drill bit is normally locked so that the drill bit is not removed or does not turn free. This button is for releasing the part. Press the button when removing or securing the drill bit.

Do not press this button other than when replacing the drill bit.

3. Waste bin

The processing waste collects here.

Dispose of the processing waste before the waste bin becomes half full.

4. START button

Starts processing.

5. STOP button

Stops processing.

This button is not for pausing processing. Lens processing can not be continued after it has come to a complete stop.

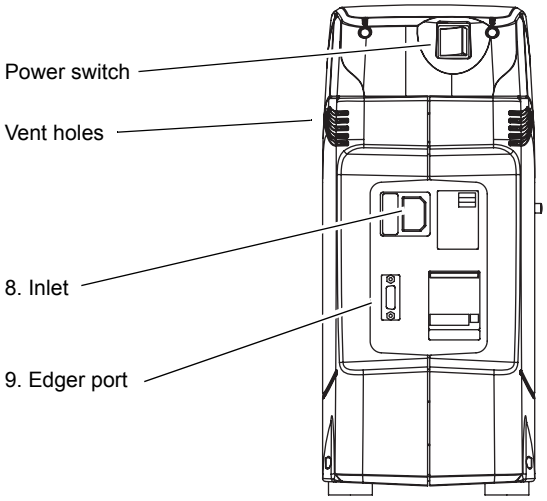
6. LED (right side)

7. LED (left side)

Indicate the instrument status and condition.

LED (left side)	LED (right side)	Instrument status and condition
ON	ON	Standby (after initialization at power-on or drilling)
OFF	Blink	The right-eye lens finishes being shaped and its lens processing data is received from the Lex 1000.
Blink	OFF	The left-eye lens finishes being shaped and its lens processing data is received from the Lex 1000.
OFF	ON	During drilling of the right-eye lens
ON	OFF	During drilling of the left-eye lens
Blink	Blink	An error occurs. (The contents of the error are displayed in the Lex 1000.) Or drill replacement mode

○ Rear view



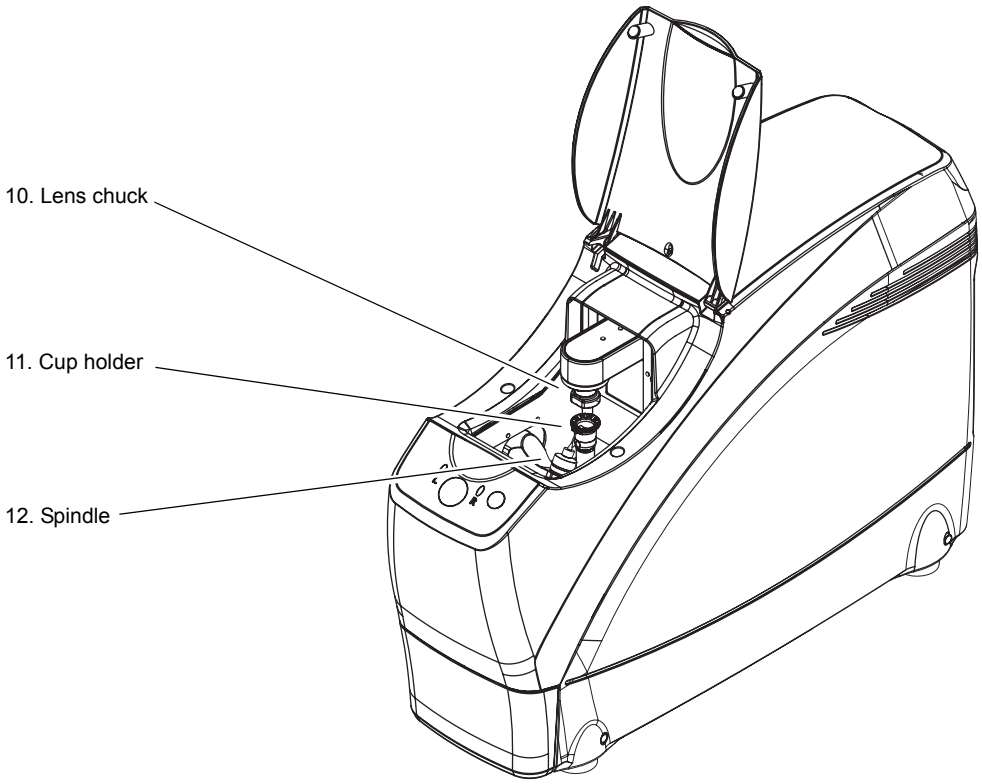
8. Inlet

Connects with the power cord.

9. Edger port

Communication port for connection with the Lex 1000

○ Processing chamber



10. Lens chuck

Presses against a lens set in the cup holder to secure it.

11. Cup holder

This part holds a lens blocked with a pliable cup.

12. Spindle

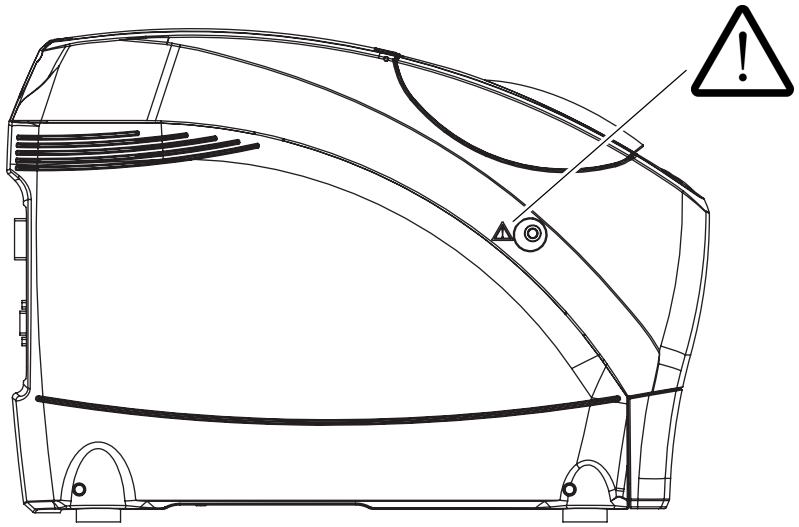
The drill bit is attached here.

○ Labels and indications on the instrument

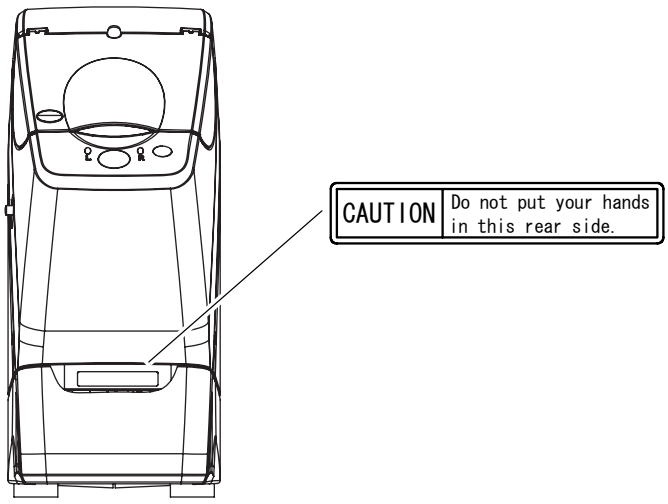
To call attention to users, some labels and indications are provided on the instrument.

	Indicates that caution must be taken. Refer to the operator’s manual before use.
	Indicates that the instrument must be supplied only with alternating current.
	Fuse
	Indicates the date of manufacture.
	Indicates the manufacturer.
	Indicates that the state of the power switch. When the symbol side of the switch is pressed down, power is supplied to the instrument.
	Indicates that the state of the power switch. When the symbol side of the switch is pressed down, power is not supplied to the instrument.
	WEEE symbol Indicates that this product shall be disposed of in a separate collection of electrical and electronic equipment is EU countries.

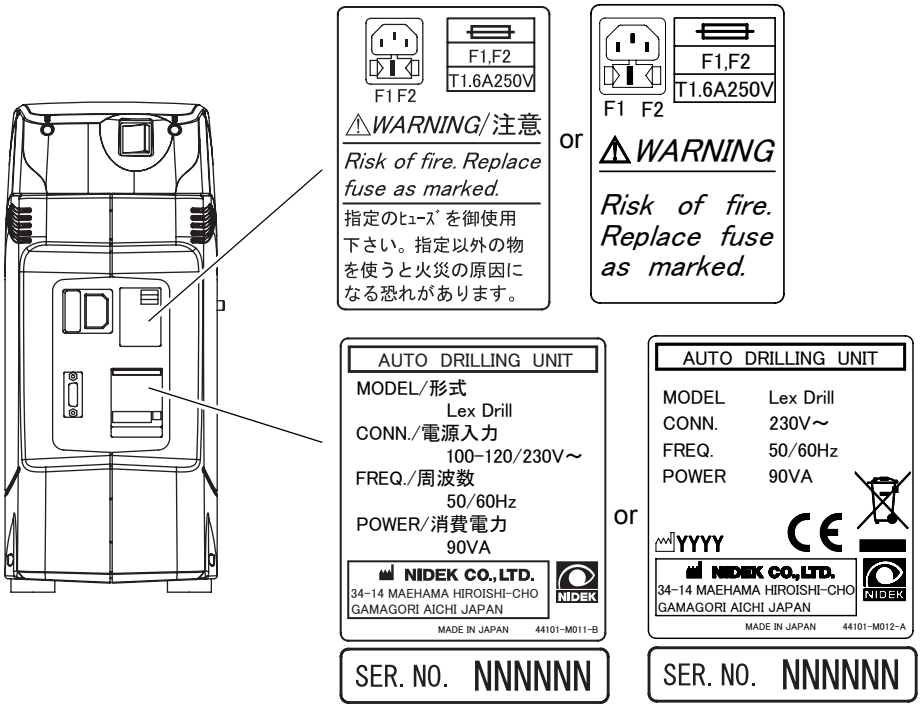
<Left side view>



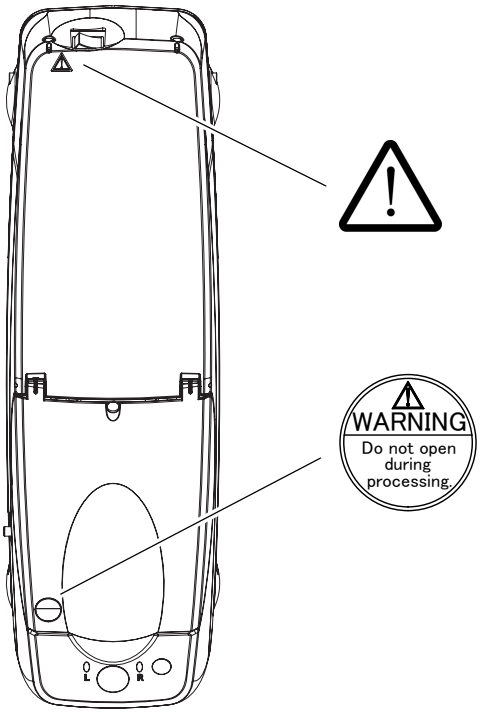
<Front view>



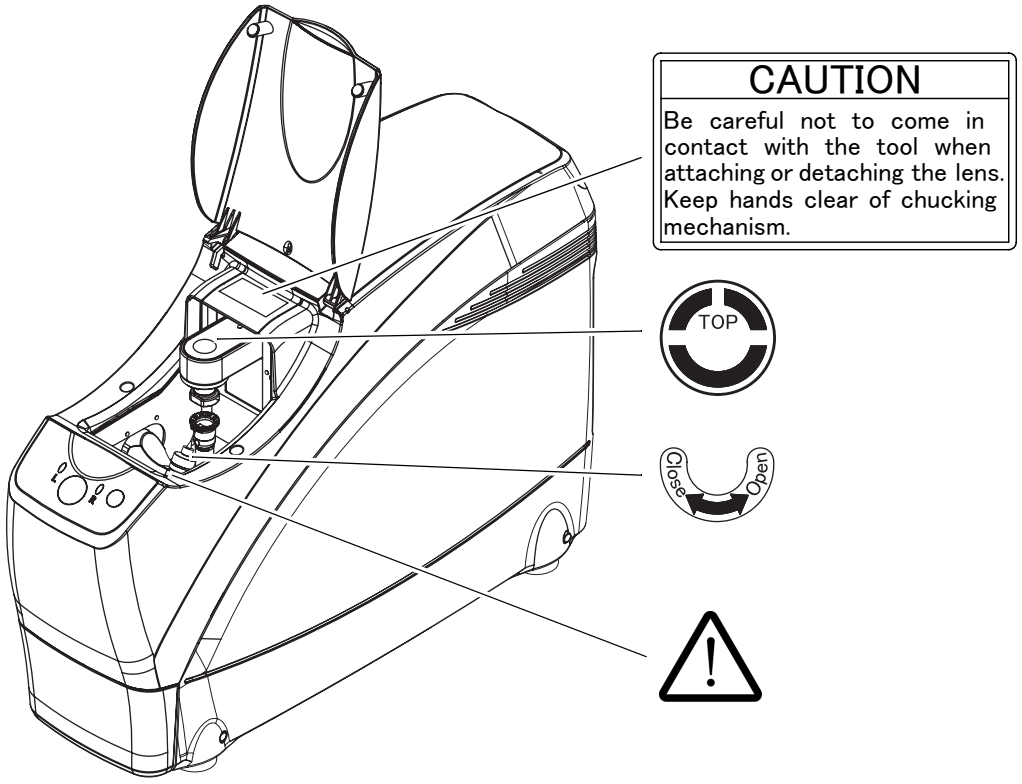
<Rear view>



<Top view>



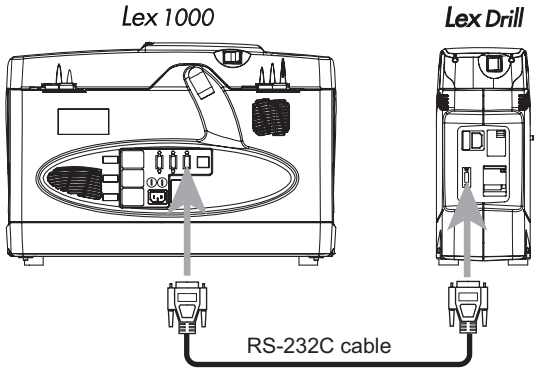
<Processing chamber>



1.3 Before First Use

1.3.1 Connection with the Lex 1000

1 Connect the provided RS-232C cable between the Edger port of the Lex Drill and the Drill port of the Lex 1000.



2 Connect the power cord to the inlet and a wall outlet.

3 Set the communication settings in the Lex 1000.

1) Turn on the Lex 1000.
2) When the layout screen is displayed, press the (▯) button to display the Menu screen.
3) Move the highlight (▬) to “Communication Setting” with the (↑) or (↓) button and press the (↵) button.
4) Select the desired system setting with the (−) or (+) button according to the displayed system configuration illustration.

   Check that the configuration illustration matches the actual equipment configuration as to tracer and blocker and select the system accordingly.

Note

- Should no applicable system configuration illustration be displayed, contact NIDEK or your authorized distributor.

5) Press (↵) button to return to the Menu screen.
6) Press (▯) button to return to the layout screen.
7) Turn off the Lex 1000.

4 Confirm that the Lex Drill is connected to the Lex 1000 properly.

1) Turn on the Lex 1000 and Lex Drill.
2) After Lex Drill is initialized, press the (▯) button of the Lex 1000 to display the Menu screen.
3) Confirm that the version of the Lex Drill is displayed on the Menu screen.

1.4 Getting Started and Exiting

1.4.1 Getting started

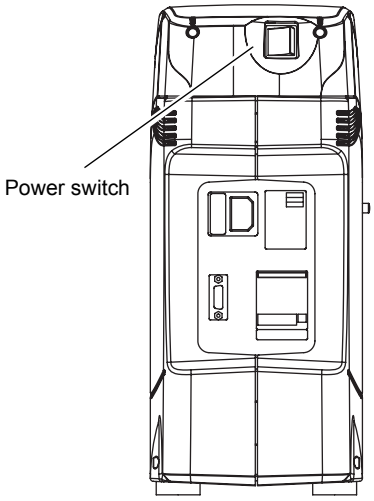
1 Confirm that the power cord is connected to the inlet and outlet properly.

⚠ CAUTION • Confirm that the main power plug is fully inserted into the outlet.
Fire may occur if the instrument is used with a loose connection.

2 Turn on the Lex Drill.

Turn ON (|) the power switch on the rear side.

The Lex Drill is initialized (the lens chuck, cup holder, and spindle move to their origin positions).



3 Turn on the Lex 1000.

1.4.2 Exiting

1 Turn the power off while the instrument is not in use.

Turn OFF (◯) the power switch on the rear side.

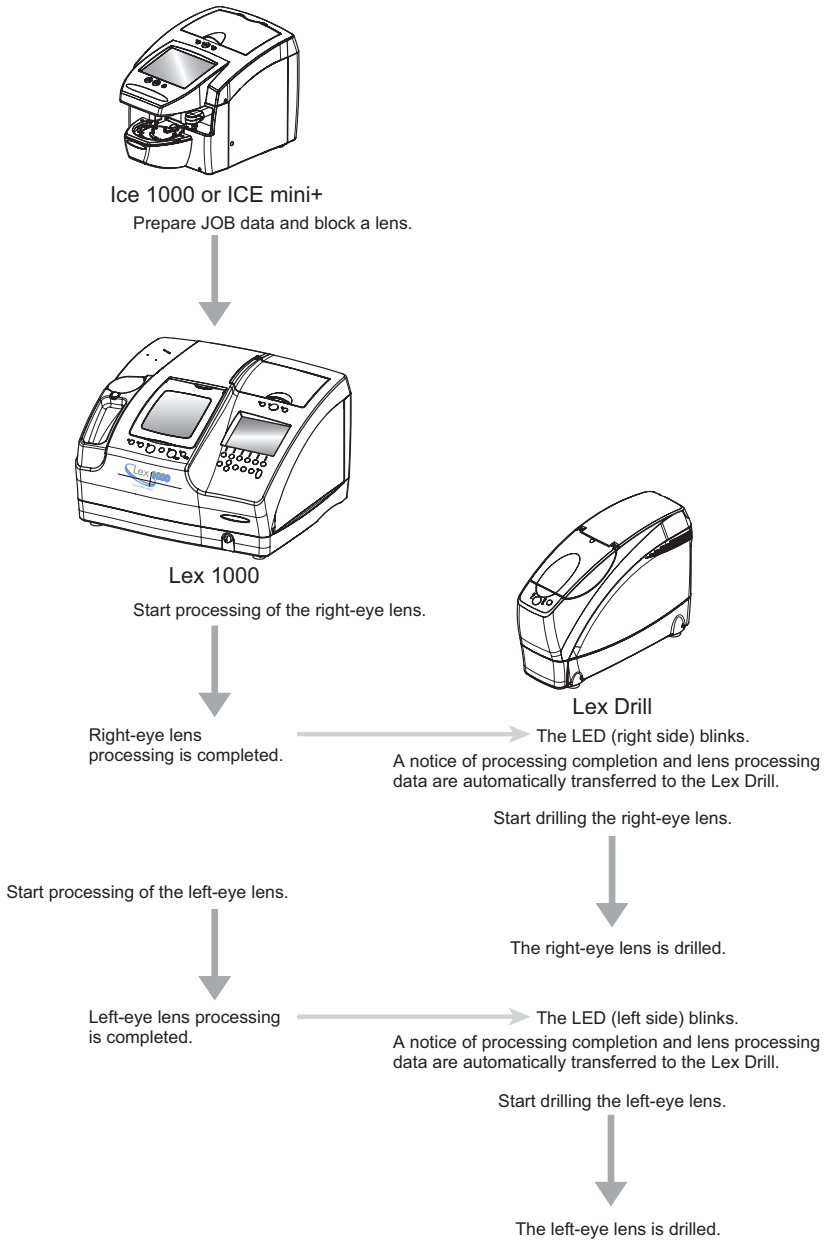
⚠ CAUTION • Do not turn the power off during processing.
Malfunction of the instrument may result. The lens or drill may break at that time. A broken piece may result in injury.

2. OPERATING PROCEDURES

2.1 Basic Processing Procedures

The following are the procedures for the Lex Drill configured in a system with the Ice 1000 (or ICE mini+) and Lex 1000.
The JOB data such as that for hole position is basically prepared by the Ice 1000 (or ICE mini+). The JOB data is imported to the Lex 1000 which processes the lens shape. The Lex Drill drills the holes based on the data from the Lex 1000.

A sample of basic lens processing flow



2.1.1 In combination with the Ice 1000

* The model name in brackets follows the procedure to indicate that it is for instruments other than the Lex Drill.

  For example)[Lex 1000]: Lex 1000 procedure

1 Prepare the JOB data including hole specifications with the Ice 1000. [Ice 1000]

2 Import the JOB data in the Lex 1000. [Lex 1000]

Read the JOB No. barcode with the optional barcode scanner.

3 Set the right-eye lens in the Lex 1000 and process it. [Lex 1000]

4 After the right-eye lens is processed in the Lex 1000, remove the lens and set in the Lex Drill.

Securely insert the pliable cup into the cup holder with the top mark facing back.

Set a lens to the cup holder with the lens top surface facing back.

⚠ **WARNING** • **Be careful to keep hands away from the drill when setting or removing the lens.**

The drill has a sharp edge. Accidental contact with the sharp edge of the drill may result in injury.

Note

• Be sure to only use the pliable cup as the lens attachment cup.

Nano cups are not available in the Lex Drill.

5 Drill the right-eye lens.

1) Close the processing chamber door.
2) Press the START button.

Drilling starts.

⚠ **CAUTION** • **Be sure to close the processing chamber door.**

Drilling does not start even when the START button is pressed if the processing chamber door is open.

⚠ **WARNING** • **Never open the processing chamber door during drilling.**

6 Remove the drilled lens after processing.

A beep is audible after processing and the lens is released.

7 Process the left-eye lens in the same manner as steps 3 to 6.

Note

- The left-eye lens can be processed while the right-eye lens is drilled in the Lex Drill.

2.1.2 In combination with the ICE mini+

* The model name in brackets follows the procedure to indicate that it is for instruments other than the Lex Drill.

  For example)[Lex 1000]: Lex 1000 procedure

1 Trace frames or a pattern with the Lex 1000. [Lex 1000]

After tracing is completed, the trace data is automatically transferred to the ICE mini+.

2 Prepare the JOB data including hole specifications with the ICE mini+. [ICE mini+]

3 Import the JOB data in the Lex 1000 by pressing the button. [Lex 1000]

The JOB data displayed in the ICE mini+ is imported.

4 Set the right-eye lens in the Lex 1000 and process it. [Lex 1000]

5 After the right-eye lens is processed in the Lex 1000, remove the lens and set in the Lex Drill.

Securely insert the pliable cup into the cup holder with the top mark facing back.

Set a lens to the cup holder with the lens top surface facing back.

⚠ WARNING • **Be careful to keep hands away from the drill when setting or removing the lens.**

The drill has a sharp edge. Accidental contact with the sharp edge of the drill may result in injury.

Note

• Be sure to only use the pliable cup as the lens attachment cup.

Nano cups are not available in the Lex Drill.

6 Drill the right-eye lens.

1) Close the processing chamber door.
2) Press the START button.

Drilling starts.

⚠ CAUTION • **Be sure to close the processing chamber door.**

Drilling does not start even when the START button is pressed if the processing chamber door is open.

⚠ WARNING • **Never open the processing chamber door during drilling.**

7 Remove the drilled lens after processing.

A beep is audible after processing and the lens is released.

8 Process the left-eye lens in the same manner as steps 4 to 7.

Note • The left-eye lens can be processed while the right-eye lens is drilled in the Lex Drill.

2.2 Setting Jewel Hole Shape

The diameter and depth of jewel holes are set in the Lex 1000. Three types of the jewel holes can be set.

1 Press the (⏎) button in the Lex 1000 to display the Menu screen.

2 Display the Grinding Setting screen.

Move the highlight ( ) to "Grinding Setting" with the (↓) button and press the (↵) button.

3 Press the Next page button twice to display the Grinding Setting screen for jewel holes.

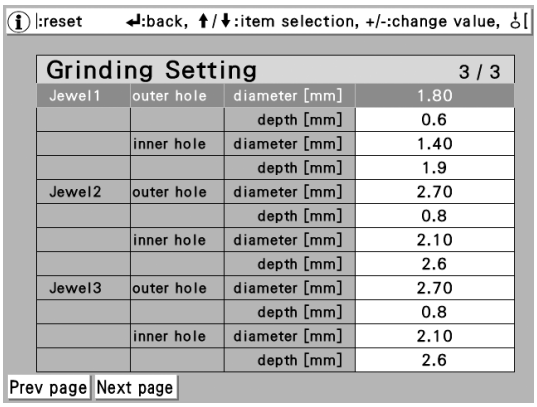
4 Move the highlight ( ) to the item to be changed with the (↑) or (↓) button and change the setting with the (−) or (+) button.

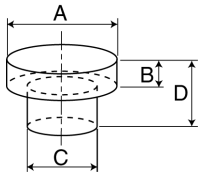
5 Return to the Menu screen.

Press the (↵) button.

6 The screen returns to the layout screen.

Press the (⏎) button.





A: Outer hole diameter
B: Outer hole depth
C: Inner hole diameter
D: Inner hole depth

Only the values of A ≥ C and D ≥ B can be entered.

○ Parameter items and setting contents

1 : Jewel1 outer hole diameter [mm]: □.□□

Sets the counterbored hole diameter of jewel hole 1.

2 : Jewel1 outer hole depth [mm]: □.□

Sets the counterbored hole depth of jewel hole 1.

3 : Jewel1 inner hole diameter [mm]: □.□□

Sets the lower counterbored hole diameter of jewel hole 1.

4 : Jewel1 inner hole depth [mm]: □.□

Sets the lower counterbored hole depth of jewel hole 1.

5 : Jewel2 outer hole diameter [mm]: □.□□

Sets the counterbored hole diameter of jewel hole 2.

6 : Jewel2 outer hole depth [mm]: □.□

Sets the counterbored hole depth of jewel hole 2.

7 : Jewel2 inner hole diameter [mm]: □.□□

Sets the lower counterbored hole diameter of jewel hole 2.

8 : Jewel2 inner hole depth [mm]: □.□

Sets the lower counterbored hole depth of jewel hole 2.

9 : Jewel3 outer hole diameter [mm] □.□□

Sets the counterbored hole diameter of jewel hole 3.

10 : Jewel3 outer hole depth [mm]: □.□

Sets the counterbored hole depth of jewel hole 3.

11 : Jewel3 inner hole diameter [mm]: □.□□

Sets the lower counterbored hole diameter of jewel hole 3.

12 : Jewel3 inner hole depth [mm]: □.□

Sets the lower counterbored hole depth of jewel hole 3.

2.3 Checking Number of Holes

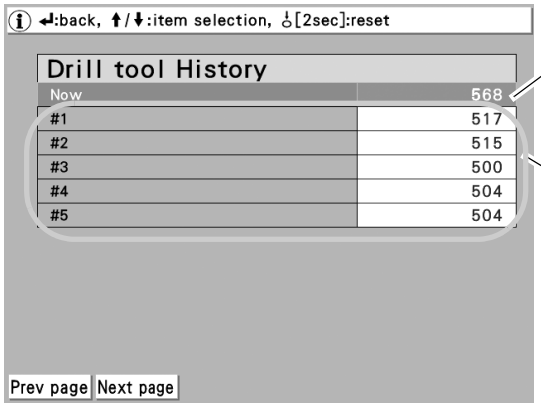
The Lex 1000 can display the number of holes drilled by the currently installed drill bit and those of previous five drill bits.

1 Press the (⌂) button in the Lex 1000 to display the Menu screen.

2 Display the Grinding Setting screen.

Move the highlight ( ) to “Processing Counter” with the (↓) button and press the (↵) button.

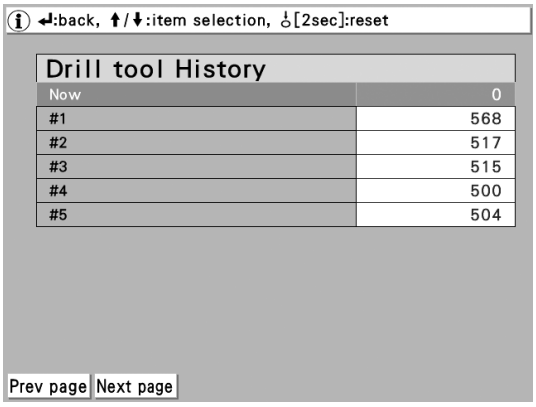
3 Press the Next page button twice to display the Drill tool History screen.



Number of holes drilled by the currently installed drill bit

Number of holes drilled by the previous five drill bits
The data for #1 is the most recent.

Replacing the drill bit updates the history of drilled holes and the number in the Now field becomes 0.



2.4 After Use

1 Turn the power off.

2 Clean the processing chamber.

Brush the processing waste out of the processing chamber.

WARNING • **Wear protective gloves when cleaning the processing chamber.**
The drill has a sharp edge. Touching the drill with bare hands may result in injury.

Note

• Always clean the processing chamber after the last use of the day.
If the chamber is left unclean for several days after being used, the processing waste becomes settled and difficult to remove.

3 Remove the waste bin and dispose of the processing waste.

Dispose of the lens processing waste as general wastes.

4 Perform check after use.

See “2.5.2 Check after use” (page 20).

5 Store accessories.

Wipe the accessories and store them free from loss or damage.

6 Close the processing chamber door.

WARNING • **Be sure to close the processing chamber door while the instrument is not in use.**
As the drill bit is attached pointing upward, accidental contact with the drill may result in hand injury.

2.5 Daily Checks

2.5.1 Check before use

Check the following before every use each day. When the instrument is not used every day, check the following before every use.
It is recommended that a checklist is prepared and the check results are recorded.

A. Does the Lex Drill initialize properly and is detected by the Lex 1000?

1) Turn on the Lex 1000 and Lex Drill.
2) Display the Menu screen of the Lex 1000 after Lex Drill initialization. Confirm that the version of the Lex Drill is displayed.

2.5.2 Check after use

Be sure to check the following after every use.
It is recommended that a checklist is prepared and the check results are recorded.

A. Is the power turned off?

B. Is the processing chamber clean?

C. Is the instrument dirty or damaged?

D.Is the drill bit cracked or broken?

E. Are all the accessories accounted for and free from damage?

Accessories: Spare drill bit and brush

2.6 Periodic Check

It is recommended to perform periodic check every two years in order to use the instrument for a long time under normal conditions. The periodic check contains the performance check of the whole instrument and replacement of maintenance parts.
Contact NIDEK or your authorized distributor if desired.

Periodic maintenance item	Contents of maintenance
Processing chamber	Confirm that the processing chamber has no cracks, breaks, or deterioration. Replace the chamber if there is a problem.
Carriage	Apply more grease to the slide part (including the feed screw) of the lens chuck. Apply more grease to the gear of the lens rotation axis.
Inside of instrument	Confirm that no processing waste fly inside the instrument. Clean the inside of the instrument if this occurs.

Note

- Periodic checks must be performed by qualified personnel.

  Do not replace the parts other than fuses and the drill bit nor disassemble the instrument. Failure to do so could cause malfunction.

3. MAINTENANCE

3.1 Troubleshooting

In the event that the instrument does not work correctly, attempt to correct the problem according to the following table before contacting NIDEK or your authorized distributor.

Symptom	Actions
The instrument does not initialize even when the power switch is turned ON (|).	• Confirm that the power plug is connected to a power outlet. • The fuses may be blown. Replace fuses. See “3.3 Replacing Fuses” (Page 25).
Processing does not start even though the START button is pressed.	• Confirm whether the processing chamber door is closed.
The finished hole quality is unsatisfactory.	• The drill bit may be deteriorated. Replace the drill bit. See “3.2 Replacing Drill Bit” (Page 24).

* If the symptom cannot be corrected with the above actions, contact NIDEK or your authorized distributor.

3.2 Replacing Drill Bit

A rough finished hole may indicate that the drill bit is dull. Replace the drill bit with a new one.

⚠ WARNING

- **Be sure to set the Lex Drill to drill replacement mode and turn it off before replacement.**

  In any other mode, the spindle or lens chuck shafts could move resulting in injury or malfunction.

- **Be sure to wear protective gloves when replacing the drill bit.**

  The drill has a sharp edge. Touching the drill with bare hands may result in injury.

Note

- Use the specified drill bit only.

  Using a drill bit other than that specified may result in improper processing.

- Check hole quality (no burrs or shape irregularity) every 200th drilling.

  The number of drilled holes can be found on the Drill tool History screen.

  If the hole has burrs or its shape is irregular, replace the drill bit. The lifetime of the drill bit depends on the conditions of use such as drilled lens material or drilled hole type.

1 Set the Lex Drill to drill replacement mode by pressing the START button while pressing the STOP button.

The lens chuck, cup holder, and spindle all return to their origin for easy replacement.

The LED (left side) and LED (right side) blink after all units move to their origins.

2 Remove the lens when it is set.

3 Turn the power off and disconnect the power cord from the inlet.

4 Press the drill release button as far as it will go.

If the button will not depress completely, rotate the knurled part holding the drill bit and find the point where the button can be pressed as far as it will go.

5 Loosen the knurled part by turning it counterclockwise while the button is pressed and remove the drill bit.

6 Insert the new drill bit as far as it will go.

7 Turn the knurled part clockwise while the button is pressed to secure the drill bit.

3.3 Replacing Fuses

If the instrument is not started even though the power switch is turned on, the fuses may be blown. Replace the fuses with spare ones.

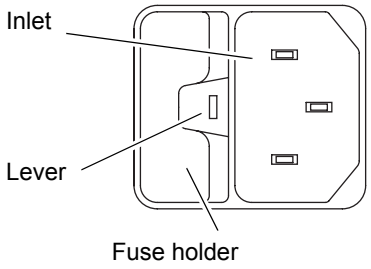
⚠ CAUTION

- **Before fuse replacement, turn off the instrument and disconnect the power cord from the wall outlet.**
  Electric shock may result.
- **Use the specified fuses only. (T 1.6 A 250 V)**
  Using fuses other than specified may result in fire.
- **If fuses burn out frequently, do not touch the inside of the instrument but contact NIDEK or your authorized distributor.**
  Contact with the inside of the instrument may cause electric shock.

1 Turn off the power switch and disconnect the power cord from the wall outlet.

2 Disconnect the power cord from the inlet.

3 Remove the fuse holder to the left of the inlet.
Pull out the fuse holder while holding the lever to the right.



4 Remove the fuses and replace them to the new ones.

5 Reattach the fuse holder.

3.4 Disposing of Processing Waste

Dispose of processing waste when it collects in the waste bin.

⚠ CAUTION

- **Do not reach inside the instrument while the waste bin is removed.**
- **Dispose of processing waste before the waste bin becomes half full.**
  Excessive processing waste may overflow into the instrument resulting in malfunction.

1 Pull out the waste bin while the instrument does not drill any lens.

2 Dispose of the processing waste in the waste bin.

Dispose of it as general waste from business activities.

3 Reattach the waste bin.

Waste bin

3.5 Cleaning Exterior

When the cover of the instrument becomes dirty, clean it with a soft cloth. For severe stains, soak the cloth in a neutral detergent, wiring well, and wipe. Finally dry with a soft, dry cloth.

Note

- Do not use organic solvents such as paint thinner to clean the exterior of the instrument.
  This could damage the surface.

3.6 Hole Depth Adjustment

Adjust the hole depth when the counterbored hole (not drilled through) depth is different from the specified one.

1 Drill a lens.

1) Call up the internal data for drill adjustment (depth) with the Lex 1000. [Lex 1000]

   Press the Polish button while pressing the button.

2) Enter the prescription and select Passive as layout mode. [Lex 1000]

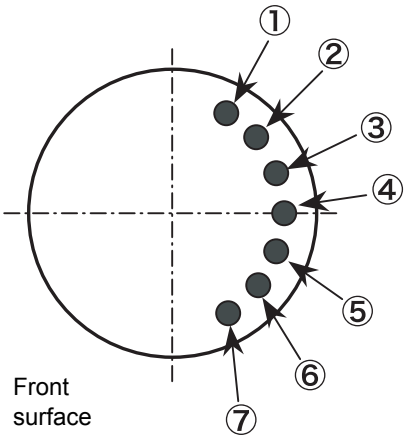
3) Set a lens and press the START button. [Lex 1000]

   The lens is not edged. When lens shape measurement is completed, the door of the processing chamber opens.

4) After the door of the processing chamber opens, remove the processed lens and set it in the Lex Drill.

5) Press the START button to drill the lens.

Internal data for drill adjustment (depth)



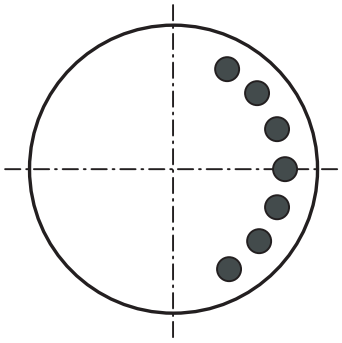
Hole 1: Hole depth of –0.3 mm, Auto tilt
Hole 4: Hole depth of 0.0 mm, Auto tilt
Hole 7: Hole depth of +0.3 mm, Auto tilt

The depths of holes 1 to 7 increase from –0.3 mm to +0.3 mm in increments of 0.1 mm.

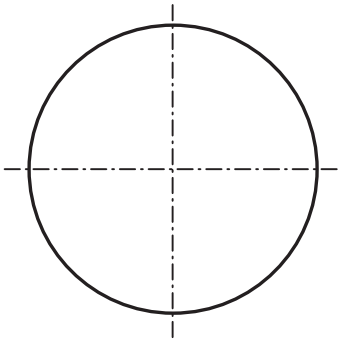
It is the best that three holes are drilled and that hole 4 is slightly made on the lens front surface.

2 Check the number of holes drilled in the lens.

When there are seven holes or no hole in the lens, the hole depths are largely shifted. In such a case, increase or decrease the Hole depth parameter by 0.5 and then drill the lens again.



When seven holes are drilled, decrease the setting value by 0.5 and the drill the lens again.



When no hole is drilled, increase the setting value by 0.5 and the drill the lens again.

3 Change the Hole depth parameter with the compensation value so that the hole depth becomes proper. [Lex 1000]

1) Display the Menu screen.

   Press the (⌂) button on the layout screen.

2) Move the highlight (▬) to “Adjustment” and press the (↵) button.

3) Move the highlight to “Hole depth” and change the setting value with the (−) or (+) button.

   Referring to the table on the right, change the setting value according to the number of holes.

Number of holes	Compensation value guide
6 units	-0.2
5 units	-0.1
4 units	0.0
3 units	+0.1
2 units	+0.2
1 unit	+0.3

   For example)Decrease the setting value by 0.1 when five holes are drilled.

4) Press (↵) button to return to the Menu screen.

5) Press (⌂) button to return to the layout screen.

3.7 Hole Diameter Adjustment

The following are the procedures for hole diameter adjustment.

1 Drill a lens.

1) Call up the internal data for drill adjustment (diameter) with the Lex 1000. [Lex 1000]

   Press the Frame button while pressing the button.

2) Enter the prescription and select Passive as layout mode. [Lex 1000]

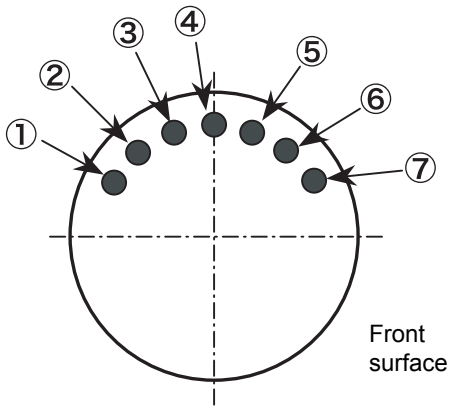
3) Set a lens and press the START button. [Lex 1000]

   The lens is not edged. When lens shape measurement is completed, the door of the processing chamber opens.

4) After the door of the processing chamber opens, remove the processed lens and set it in the Lex Drill.

5) Press the START button to drill the lens.

Internal data for drill adjustment (diameter)



Hole 1: Diameter of 2.00, Auto tilt (drilled through)
Hole 4: Diameter of 2.06, Auto tilt (drilled through)
Hole 7: Diameter of 2.12, Auto tilt (drilled through)

The diameters of holes 1 to 7 increase from 2.00 to 2.12 in increments of 0.02.

2 Check the hole diameter of the processed lens.

Put the pin gauge (40395-M202) through holes and find a hole through which the pin passes smoothly.

If the pin gauge passes loosely through even hole 1, adjust the setting value by –0.12 and drill a lens again.

3 Change the Hole diameter parameter with the compensation value according to the hole selected in step 2. [Lex 1000]

1) Display the Menu screen.

   Press the (⌂) button on the layout screen.

2) Move the highlight ( ) to “Adjustment” and press the (↵) button.

3) Move the highlight to “Hole diameter” and change the setting value with the (−) or (+) button.

   Referring to the table on the right, change the setting value according to the hole selected in step 2.

Hole No.	Compensation value guide
7	+0.12
6	+0.10
5	+0.08
4	+0.06
3	+0.04
2	+0.02
1	0

For example) Increase the setting value by 0.06 when hole 4 is optimum.

4) Press (↵) button to return to the Menu screen.

5) Press (⌂) button to return to the layout screen.

3.8 List of Consumables and Maintenance Parts

Item	Order number	Remarks
Fuse	804-02-02040	T 1.6 A 250 V
Drill bit	44101-3010	ø0.8 L6.5 (five units included)
Pin gauge (optional)	40395-M202	Straight pin of ø2.0

4. SPECIFICATIONS AND ACCESSORIES

4.1 Safety Features

For safety use, the instrument is provided with the following features.

[Safety cover switch]

The safety cover switch is installed so that processing does not start when the door of the processing chamber is open.

[Self-diagnosis function]

This function always checks the instrument state in operation. When an abnormality has been detected, the operation is immediately stopped and an error indicating the contents of the abnormality is displayed in the Lex 1000.

Error code table

Error No.	Error display	Details
—	Close a door.	The processing chamber door is open when the START button is pressed. Measure: Close the processing chamber door and then press the START button.
2202	Receive data error	Data fails to be received from the Lex 1000. Measure: Check cable connection.
2501	H initialize error	H axis initialization error Measure: Turn the power on and off.
2502	V initialize error	V axis initialization error Measure: Turn the power on and off.
2504	S initialize error	S axis initialization error Measure: Turn the power on and off.
2505	R initialize error	R axis initialization error Measure: Turn the power on and off.
2601	Chuck origin error	The origin sensors of the lens chuck shafts are abnormal. Measure: Turn the power on and off.
2602	Chuck move error	The close sensors of the lens chuck shafts are abnormal. Measure: Turn the power on and off.
2701	Cover sensor error	The cover sensor is abnormal. Measure: Turn the power on and off.

* If the symptom cannot be corrected with the above actions, contact NIDEK or your authorized distributor.

* The “Close a door” message is displayed in the information bar of the Lex 1000 and the other messages are displayed in the message box of the Lex 1000.

4.2 Specifications

○ Drilling functions

• Layout mode	Passive mode only
• Maximum lens diameter	72 mm in diameter * This indicates the maximum lens size that can fit in the processing chamber.
• Hole diameter range	0.8 to 4.0 mm in diameter (in increment of 0.01 mm)
• Hole depth range	6 mm or less
• Drilling range	32 to 75 mm in diameter from lens rotation axis
• Drilling direction	Auto: In the direction of the normal to the lens front surface (A hole is automatically drilled in the normal direction based on the lens measurement result.) Simple tilt: The tilt angle to the chuck axis is specified (range: 0 to 30°).
• Available hole type	Simple, slotted, jewel, rectangle
• Slotted hole width	0.8 to 4.0 mm in diameter (in increment of 0.01 mm)
• Slotted hole depth range	6 mm or less
• Slotted hole length range	20 mm or less
• Maximum number of holes	A total of 16 for both lenses combined

○ Processable lens

• Material	Plastic (such as CR-39, high index plastic is also included) Polycarbonate Acrylic resin Trivex Polyurethane

○ Lens chucking

• Chuck method	Motorized
• Chuck pressure	45 kgf
• Maximum lens thickness at the center	4.5 mm
• Applicable cup type	Pliable (nano cups unavailable)

○ Power requirements

- Power source AC 100-120/230 V 50/60 Hz
- Power consumption 90 VA at the maximum

○ Dimensions and weight

- Dimensions 145 (W) × 477 (D) × 335 (H) mm (excluding protrusions)
- Weight 15 kg (main body only)

○ Environmental conditions (in use)

- Installation location Indoors
- Temperature 5 to 40 °C (41 to 104 °F)
- Humidity 30 to 80% [from 5 to 31 °C (from 41 to 87.8 °F)]
  The minimum acceptable relative humidity is 30% for the temperature range of 31 to 40 ºC (87.8 to 104 °F). The maximum acceptable relative humidity is 80% for temperatures up to 31 ºC which decreases linearly after that to 50% relative humidity at 40 ºC.
- Pressure 700 to 1060 hPa
- Overvoltage Category II
- Pollution degree 2

○ Environmental conditions (in transport and storage)

- Temperature –25 to 70 °C (–13 to 158 °C)
- Humidity 10 to 95% (non-condensing)
  * The conditions in transport and storage apply to the instrument when packed.

4.3 Standard Configuration

4.3.1 Standard accessories

• Drill bit	5 units
• RS-232C cable	1 unit
• Brush	1 unit
• Power cord	1 unit
• Spare fuse	2 units
• Operator’s manual	1 volume

5. INDEX